

1100 - Runway Commissioning

General

Airport development projects often result in a physical change to airport runways and/or navigational aid facilities. These projects, which may include NAVAID establishments, runway extensions, relocations, and/or reconstructions, typically impact geometric features, elevations, and existing runway approaches. In order to maintain current and accurate aeronautical data, airport operators are required to submit to the FAA appropriate survey information and related aeronautical information that result from a physical change at the airport.

What Information is required?

The type and extent of information that is required will vary per the extent of physical change and the type of approach that is impacted. The information requirements basically fall within the following categories

1. Instrument Approach Runways – Development projects that impact precision and non-precision runways require an aeronautical survey conforming to the following FAA Advisory Circulars:
 - 150/5300-16 - Establishment of Geodetic Control
 - 150/5300-17 - Airport Imagery Acquisition
 - 150/5300-18 - Field Data Collection and Geographic Information System (GIS) Standards
2. Visual Runways – Development projects that impact visual runways require survey information related to the runway end coordinates and threshold elevation.
3. Commissioning Data: All development project involving new or modified runways require submission of an updated Form 5010-1 - Airport Master Record.

FAA GIS

The transition to the FAA GIS system will likely modify the information requirements in the future. Sponsors and consultants should coordinate with the FAA project manager early in the project schedule in order to determine the information requirements.

Purpose

The FAA uses this information for several purposes. The aeronautical survey data is used to modify existing runway approaches and to develop new instrument approaches. This includes both precision and non-precision.

The commissioning data is used to update various databases and publications such as the Airport Master Record, Airport Facility Directory, as well as various charting and instrument approach publications.

When to Submit

Instrument Approach Procedures (IAP):

Airport operators should keep in mind that the process to validate survey information and to develop or modify an instrument approach procedure requires a significant amount of time. We strongly recommend that aeronautical survey data for new or revised instrument approach procedures be submitted at least **18 to 24 months prior** to the anticipated commissioning date.

Failure to submit acceptable aeronautical survey data in a timely manner will likely delay implementation of approach procedures for the new or modified runway. For new or revised IAPs, proponents must submit an [Instrument Approach Procedure Request Form](#) in order to include their project in the [IAP production plan](#).

Airport Master Record:

The information for the commissioning of a runway (Airport Master Record, 5010-1) should be submitted a minimum of **4 weeks** prior to the anticipated commissioning date.

For AIP projects, sponsors or their consultants should coordinate with the appropriate State Airport Engineer early on in the project design phase in order to determine the most appropriate time to submit this information so that charting cycle update deadlines are not missed.

Actual Runway Commissioning

Twenty four (24) hours prior to the actual commissioning of the runway, the Airport Operator shall submit a memo or email to the FAA project manager indicating the actual date of runway commissioning and whether or not all marking and lighting is in place and operational.

Note: The practice of publishing new procedures prior to completion of the supporting ground construction and equipment installations and then issuing a NOTAM to make a newly published procedure inactive is no longer acceptable. Therefore, committing to a specific projected date for commissioning of runways/airports in an effort to publish procedures in advance will not be permitted.

RESOURCES**Advisory Circulars**

- [AC 150/5300-16](#) - General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey
- [AC 150/5300-17](#) - General Guidance and Specifications for Aeronautical Surveys: Airport Imagery Acquisition and Submission to the National Geodetic Survey
- [AC 150/5300-18](#) - General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

Aeronautical Surveys

- [FAA Airports GIS Website \(Login\)](#)
 - [Sample Request for Proposal](#) (pdf)
 - [Sample Statement of Work For Aeronautical Surveys](#) (pdf)
 - [Selection Process](#) (pdf)
 - [Surveyor Introduction](#)

Aviation System Standards (AVN)

- [So you want an Instrument Flight Procedure...](#)
- [Instrument Flight Procedure Request Form](#)
- [Instrument Flight Procedures \(IFP\) Production Plan](#)

National Geodetic Survey

- [NGS Aeronautical Web Site](#)
- [NGS PACS/SACS Data Sheets](#)
- [NGS Survey Data Sheets](#) - ASCII text file that contains data for a NGS survey control station

1110 - IAP Survey Requirements

General

Airport development projects that result in the requirement for new or revised Instrument Approach Procedures (IAP) require the submittal of accurate survey information that meets the requirements of FAA Advisory Circulars 150/5300-16, 150/5300-17, and 150/5300-18. The FAA uses this information to develop new approach procedures or modify existing approach procedures.

FAA Requirements

The process for obtaining and submitting aeronautical surveys is currently in a transition phase to a GIS based system. Sponsors and consultant may expect on-going changes in how survey data is collected and submitted. The Third Party Survey System is discontinued as of October 1, 2009.

Sponsors and consultants shall no longer reference FAA standard 405 for acquiring aeronautical surveys. As of 2007, aeronautical surveys shall comply with the standards presented in the following Advisory Circulars.

- [AC 150/5300-16](#) - General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey
- [AC 150/5300-17](#) - General Guidance and Specifications for Aeronautical Surveys: Airport Imagery Acquisition and Submission to the National Geodetic Survey
- [AC 150/5300-18](#) - General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

Submittal

The process to analyze, develop and publish a new or revised procedure requires a considerable amount of time. The IAP development process does not start until the survey data is validated. Sponsors that desire to have instrument approaches available at the time of the runway commissioning date must submit the required survey information a minimum of **18-24 months** prior to the runway opening. Failure to submit timely survey data will likely impact the type of approach that will be available at the time of runway commissioning

Project Formulation Meeting

We strongly encourage sponsors and consultants establish a project meeting with the FAA approximately 2 years prior the anticipated runway project completion. Issues surrounding land acquisition and submittal of survey information should be thoroughly discussed.

RESOURCES

Advisory Circulars

- [AC 150/5300-16](#) - General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey
- [AC 150/5300-17](#) - General Guidance and Specifications for Aeronautical Surveys: Airport Imagery Acquisition and Submission to the National Geodetic Survey
- [AC 150/5300-18](#) - General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

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 - [Sample Statement of Work For Aeronautical Surveys](#) (pdf)
 - [Selection Process](#) (pdf)

Forms

- [FAA Airport Field Survey Checklist General](#) (pdf)
- [FAA Deliverables Checklist](#) (pdf)
- [GPS Observation Log Sheet](#) (pdf)
- [Interview with Air Traffic Control Tower Chief](#) (pdf)
- [Interview with Airport or Operations Manager](#) (pdf)
- [Interview with Facilities Personnel](#) (pdf)
- [Navigational Aid Facilities Abstract](#) (pdf)
- [Navigational Aid Facility Sketch](#) (pdf)
- [Navigational Aid Screening and Interference Measurement Sketch](#) (pdf)
- [Non-Vertically Guided Airport Airspace Analysis Checklist](#) (pdf)
- [Pencil Rubbing Form](#) (pdf)
- [Photographic Flight Report](#) (pdf)
- [Runway Data Sheet](#) (pdf)
- [Station Description and Recovery](#) (pdf)
- [Station Location Sketch and Visibility Diagram](#) (pdf)
- [Station Table and Recon Checklist](#) (pdf)
- [Vertically Guided Airport Airspace Analysis Checklist \(draft\)](#) (pdf)
- [Zip File of Alls forms](#)

Survey and Quality Control Plan Templates

- [Sample template for Survey and Quality Control Plan \(AC 150/5300-18\)](#) (pdf)
- [Sample template for Imagery Plan \(AC 150/5300-17\)](#) (pdf)
- [Sample template for Geodetic Control Plan \(AC 150/5300-16\)](#) (pdf)

National Geodetic Survey

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1120 – Visual Runways

General

At this time, development projects that involve runways with visual approaches do not require the same level of survey as that required for instrument approach procedures. This may change over time with the implementation of the FAA GIS system

For current projects, a field survey by a registered surveyor shall establish runway end coordinates and threshold elevations.

If a visual approach with circling minimums is desired, an obstruction survey will be required.

The geodetic coordinates and elevation information must be based on NAD83 and NAVD88 datums.

When to submit

Survey information for a visual runway should be submitted no later than 30-days prior to the anticipated runway opening.

1130 - Airport Master Record (5010)

General

Regardless of the type of approach (visual, non-precision, precision) or the funding source (AIP, State, Local) involved in the project, all runway commissioning information must be submitted to the FAA in order to be included in aeronautical publications. The process for submitting the information may differ per the type of modification and whether AIP funding is involved

AIP Development Projects

- Submit marked up copy of 5010 report that indicates modifications to the following sections of the airport master record;
 - Runway Data
 - Lighting/Approach Aids
 - Obstruction Data
 - Declared Distances
- Four weeks prior to the anticipated commissioning date, the sponsor shall submit an updated Airport Master Record (FAA Form 5010-1). All relevant changes to the runway configuration(s) must be clearly identified and the reported information must agree with the submitted survey data. It is critical that the information reported on the updated 5010-1 form match the calculated values obtained from the runway survey.
- Submit the updated Airport Master Record (for Runway Commissioning of AIP funded Projects only) to the FAA project manager.

Sponsor Initiated Changes

- Updates of general information such as point of contact information, services information, based aircraft etc. shall be submitted separate from the AIP development revisions. Such changes may be sent directly to:

Federal Aviation Administration
Aeronautical Information Services
800 Independence Ave. S.W.
Washington D.C 20591
Phone 1-866-295-8236

Reporting of Actual Commissioning

The sponsor shall submit a memo (or email) to the Regional Office stating that the runway/airport is actually commissioned and is open to the flying public as of the specific opening date. The sponsor/consultant shall indicate whether marking, lighting and NAVAIDS are in place and operational as of the opening date.

At the time of the actual commissioning, the sponsor will need to contact the Flight Service Station to issue a NOTAM for the commissioning of the runway/airport. This NOTAM should identify the new dimensions and surface type of the runway. This NOTAM shall be left in effect until appropriate publications reflect the physical airfield changes.

RESOURCES

Sample Documents

- [Sample 5010-1 Mark-up](#)

Databases

- [Online 5010's \(GCR Rigmar\)](#)

1131 - Data Elements Airport Master Record (5010)

General

Information and guidance is provided herein to assist sponsors and engineers in updating specific elements of a 5010 record. FAA Order 5010.4 contains a more comprehensive listing and description of all data elements.

The updated 5010 should be submitted approximately 30 days prior to the runway commissioning. All modifications to the noted elements should be identified. While there is no 5010 data element for runway coordinates, bearings and elevations, this information is required prior to commissioning and thus included herein.

Element	Data Element	Information
30	RUNWAY IDENTIFICATION	<ul style="list-style-type: none">Compass Direction: (e.g., 18/36.) based on Survey bearings - verified by AVN.Runway Number: If a paved runway already has a number painted, it holds precedence over any changes. For example, if a runway is painted 17/35 and the actual magnetic direction is 18/36, element #30 stays 17/35 until marking has been changed.MARKINGS MUST BE COMPLETED BEFORE COMMISSIONING OF NEW RUNWAY CONFIGURATION
31	LENGTH	<ul style="list-style-type: none">Must reflect Length of Full-Strength Runway.When recording runway length changes for IFR runways, the following shall be met:<ul style="list-style-type: none">Must be verified through the Regional Office.Must be based on 405 Surveyed Data.IFR approach must already be published and runway ready for commissioning including completed marking and lighting.
32	WIDTH	<ul style="list-style-type: none">MEASURED WIDTH: Enter the measured width to the nearest foot. For paved runways enter the width that is full strength and usable for a runway.WIDTH VARIATIONS: If the width varies, list the narrowest width in element 32 and reference it with an A032 remark, including a description showing the width variances.

Element	Data Element	Information
33	SURFACE-TYPE & CONDITION	<ul style="list-style-type: none"> SURFACE TYPES: Enter the abbreviation for the runway surface type. (Ref FAA Order 5010.4) GRVL = Gravel CONC = Concrete ASPH = Asphalt TURF = Grass DIRT = Natural Soil WATER = Water CONDITION: Enter the condition of the runway surface. To determine whether the condition is "G", "F", or "P", use the following guidelines: <ul style="list-style-type: none"> "G" = Good Condition: 70-80% of the pavement may have some functional cracking that is properly sealed. "F" = Fair Condition: 60-70% of the pavement may have functional cracking (unsealed joints & spalling). "P" = Poor Condition: 50% or more of the pavement suffers from some form of structural distress (large open cracks, surface & slab spalling, vegetation through cracks and joints). If the condition is listed as poor, a remark is required (e.g., A033 RWY 18/36-Pavement has cracks and loose rocks on runway.)
34	SURFACE TREATMENT	<ul style="list-style-type: none"> Identify any surface treatment <ul style="list-style-type: none"> GRVD = Grooved PFC = Porous Friction Course AFSC = Aggregate Friction Seal RFSC = Rubberized Friction Seal WC = Wire Comb or Tined NONE = No treatment present
35	GROSS WT: (Single Wheel)	<ul style="list-style-type: none"> Enter gross weight strength for Single-Wheel Type Landing Gear (in thousands). NOTE: All wheel weights must be as approved by the Regional Paving/Engineering Specialist.
36	DW	<ul style="list-style-type: none"> Enter gross weight strength for Dual-Wheel Type Landing Gear (in thousands).
37	DTW	<ul style="list-style-type: none"> Enter gross weight strength for Dual-Tandem Wheel Type Landing Gear (in thousands).
38	DDTW	<ul style="list-style-type: none"> Enter gross weight strength for Double Dual-Tandem Wheel Type Landing Gear (in thousands).
40	EDGE INTENSITY	<ul style="list-style-type: none"> Enter intensity of the runway lights as follows: <ul style="list-style-type: none"> HIGH = HIRL MED = MIRL LOW = LIRL NSTD = Non Standard light systems. NONE = No edge lighting system For a NSTD, must make an A040 comment in the remarks section as to what is non-standard.

Element	Data Element	Information
42	RWY MARK TYPE -CONDITION	<ul style="list-style-type: none"> Enter the type of runway marking and the condition <ul style="list-style-type: none"> – TYPE: <ul style="list-style-type: none"> ■ PIR = Precision ■ NPI = Non-Precision ■ BSC = Basic ■ NRS = Numbers Only ■ NSTD = Non-standard – CONDITION <ul style="list-style-type: none"> ■ G = Good ■ F = Fair ■ P = Poor Type of marking may be at a higher level than the actual approved approach. Level of marking may never be less than the approved approach.
43	VGSI-Visual Glide Slope Indicator	<ul style="list-style-type: none"> Enter type of equipment and the number of boxes for the runway end at which it is located if a VGSI is present. PAPI <ul style="list-style-type: none"> P2L - Two unit PAPI system on left side P2R - Two unit PAPI system on right side P4L - Four unit PAPI system on left side P4R - Four unit PAPI system on right side VASI <ul style="list-style-type: none"> V2L - Two Box VASI on left side V2R - Two Box VASI on right side V4L - Four Box VASI on left side V4R - Four Box VASI on right side V6L - Six Box VASI on left side V6R - Six Box VASI on right side Refer to the directory legend of the Airport Facility Directory for other system abbreviations.
44	THRESHOLD CROSSING HEIGHT	<ul style="list-style-type: none"> Enter calculated value based on the height of the effective visual glide path above the runway threshold
45	VISUAL GLIDE ANGLE	<ul style="list-style-type: none"> Enter established glide angle of the effective visual glide path. This is typically 3 deg but may be modified for unique situations.
46	CENTERLINE TOUCHDOWN ZONE	<ul style="list-style-type: none"> Enter "Y" if the airport has centerline lighting. Enter "N" if no centerline lighting is present.
47	RVR-RVV	<ul style="list-style-type: none"> Runway Visual Range - Runway Visual Value Enter value to indicate locations at which runway visual range equipment is installed. T = Touchdown M = Midfield R = Rollout N = No RVR available
48	REIL	<ul style="list-style-type: none"> Runway End Identifier Light - Enter "Y" or "N" for each Runway end to indicate whether REILs are available

Element	Data Element	Information																												
49	APCH LGHTS	<ul style="list-style-type: none">• Approach Lights -Enter appropriate value for each runway end.• ALSAF: 3000' high-intensity approach system with centerline sequence flashers.• ALSF1: Std. 2,400' high-intensity apch system with sequenced flashers. Category 1 configuration.• ALSF2: Std. 2,400' high intensity apch system with sequenced flashers. Category 2 or 3 configuration.• MALS: 1,400' medium-intensity apch light system.• MALSF: 1,800' med.-intensity apch light system with sequenced flasher lights.• MALSR: 1,800' med-intensity apch light system with RWY alignment indicator lights.• SSALS: Simplified short apch lighting system.• SSALF: Simplified short apch lighting system with RWY sequenced flasher lights.• SSALR: Simplified short apch lighting system with RWY alignment indicator lights.• NEON: Neon ladder system.• ODALS: Omnidirectional apch lighting system. Do not show REILs in addition to ODALS because they are part of the system.• LDIN: Lead-in light system.• NSTD:• All others. Describe.• NONE: If no approach lighting system available.																												
50	FAR PART 77 CATEGORY	<ul style="list-style-type: none">• Enter the Runway Category defined by FAR Part 77 for the most precise existing approach to each runway end. Heliports and seaports are excluded. Utility runways are defined as any runway intended for use by aircraft with maximum gross weight of 12,500 or less. <table><tr><th>Value</th><th>Definition</th><th>Primary Surface</th><th>Approach Surface</th></tr><tr><td>A(V)</td><td>Utility runway with a visual approach</td><td>250 feet</td><td>20:1</td></tr><tr><td>B(V)</td><td>Other than Utility RWY with a visual approach</td><td>500 feet</td><td>20:1</td></tr><tr><td>A(NP)</td><td>Utility runway with a non-precision approach</td><td>500 feet</td><td>20:1</td></tr><tr><td>C</td><td>Other than utility runway with a non-precision approach and visibility minimums greater than 3/4 mile</td><td>500 feet</td><td>34:1</td></tr><tr><td>D</td><td>Other than utility runway with a non-precision approach and visibility minimums equal to or less than 3/4 mile</td><td>1,000 feet</td><td>34:1</td></tr><tr><td>PIR</td><td>Precision Instrument runway</td><td>1,000 feet</td><td>50:1/40:1</td></tr></table>	Value	Definition	Primary Surface	Approach Surface	A(V)	Utility runway with a visual approach	250 feet	20:1	B(V)	Other than Utility RWY with a visual approach	500 feet	20:1	A(NP)	Utility runway with a non-precision approach	500 feet	20:1	C	Other than utility runway with a non-precision approach and visibility minimums greater than 3/4 mile	500 feet	34:1	D	Other than utility runway with a non-precision approach and visibility minimums equal to or less than 3/4 mile	1,000 feet	34:1	PIR	Precision Instrument runway	1,000 feet	50:1/40:1
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PIR	Precision Instrument runway	1,000 feet	50:1/40:1																											

Element	Data Element	Information
51	DISPLACED THRESHOLD	<ul style="list-style-type: none">• Displaced Threshold:<ul style="list-style-type: none">– The length of the displacement in feet for each runway end should be entered in this element.– The portion of pavement behind a displaced threshold may be available for takeoffs either direction or landings from the opposite direction.– This length is included in the total length of the runway.• Displaced threshold markings for paved runways: The markings should be painted white, not yellow, since the area is considered usable runway. If the markings are yellow write NSTD in data element 42 for that end of the runway. In addition, add an A042 remark. For example: RWY 03 DSPLCD Markings Yellow.